NTS10 USER's GUIDE

(PRELIMINARY)

OCTOBER 1983

(UM-NTS10)

INTERLAN

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PRELIMINARY DOCUMENT

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REVISION HISTORY

Revision:	Date:	Effective With:
Preliminary Release	November, 1983	Software V01.00

Documentation Part Number(s): UM-NTS10

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Westford, MA 01886

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PREFACE

This NTS10 User's Guide is a preliminary version of the official version which will be available in January, 1984.

With this manual, we have tried to strike a balance - how to tell the average user what they need to know without introducing unnecessary complexity.

You are our users, and we would like to have your comments on the content of this preliminary manual, preferably in writing. We will attempt to incorporate as many of your suggestions as possible in the final manual. Our aim is to save you work by answering as many questions as possible in a simple book.

You may copy this preliminary manual freely. We suggest you use it in conjunction with user orientation sessions at an individual or group level. We also suggest that you encourage users to fill out the summary sheet.

INTRODUCTION

This guide is to introduce you to the most basic features of the NTS10. It assumes that you are a terminal user requiring access to ports on one or more computer systems within your establishment. It also assumes your location has a network manager and that your terminal is connected to a port on a nearby NTS10 which has been set up correctly.

Many advanced facilities are available. These are described in detail in the NTS10 Network Manager's Guide. When you need access to these advanced features (e.g. use of a line printer or a modem) you should discuss your requirements with the person acting as Network Manager at your location.

Figure 1 shows a simple configuration of terminals, NTS10 units and computers. It may help you to understand the following sections.

There are a number of things you need to understand before you can use the NTS effectively.

We have tried to teach you the minimum set in the next few pages. We are about to show you:

1. How to Identify a Target Port

   How to tell the NTS which connection you wish to make. Think of it as learning a set of telephone numbers.

2. How to Enter (and leave) Command State

   You need to know how to talk to an NTS. This is done by entering commands at your terminal, but first the NTS has to be told you want to give commands. You also need to tell it you have finished.

3. How to Enter and Use a Password

   The NTS provides security features to prevent unauthorized access to computer resources. You need to have a valid password and know how to enter it.

4. How to Set Up a Connection (Call)

When you reach this step you are ready to work and operation beyond this point can be identical to your previous mode of operation.

5. How to Disconnect

When you have finished you then disconnect. We tell you how to properly do so.

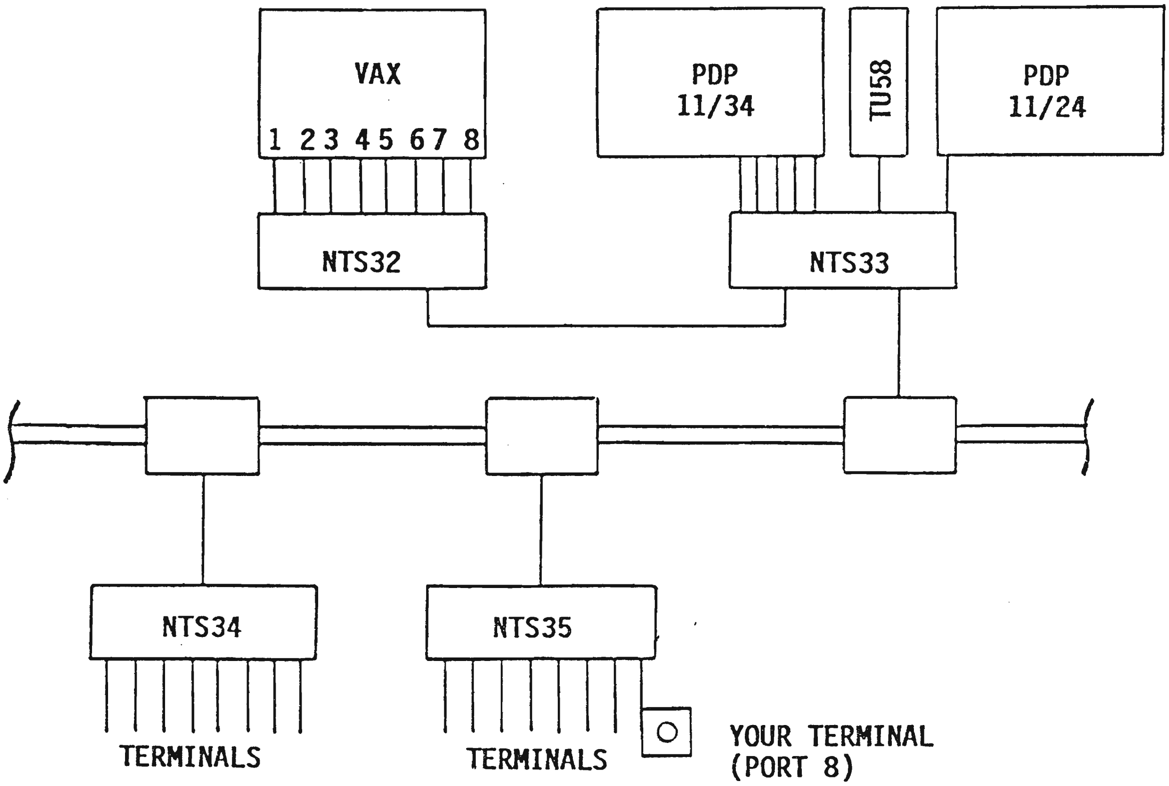

Figure 1. A Map Of An NTS Network. Showing NTS10's with numbers 32, 33, 34, 35. Examples in the text refer to VAX, port 4. You can see this in the diagram. Your terminal is shown at address 8.35 (i.e. Port 8 on NTS10 Number 35).

BASIC FEATURES

1 HOW TO IDENTIFY A TARGET PORT

2 HOW TO ENTER (AND LEAVE) COMMAND MODE

3 HOW TO ENTER AND USE A PASSWORD

4 HOW TO SET UP A CONNECTION (CALL)

5 HOW TO DISCONNECT

6 HOW TO RECALL

ADDITIONAL COMMANDS

7 HOW TO CAMPON

8 HOW TO SET UP SEVERAL CONNECTIONS AND SWITCH BETWEEN THEM

9 HOW TO DISCONNECT SEVERAL CONNECTIONS

10 HOW TO SEND A MESSAGE TO ANOTHER USER

11 HOW TO GET HELP AND LEARN MORE

1 HOW TO IDENTIFY A TARGET PORT

TARGET ADDRESS

The computer ports which you wish to access each have a number (an address). The address consists of two parts.

The first part is the port number on the target NTS10 and is in the range 1 to 8.

The second part is a unique number associated with the NTS attached to the port you wish to access (your target). A typical NTS10 number is 020701000032 and this is actually printed on the unit. This may be abbreviated to 32.

These two numbers are combined to produce an address e.g. 4.32 means port 4 on NTS10 number 020701000032. Your network manager is the only person who can advise you of the addresses of the ports you will need to use.

NOTE: As a rule, the abbreviated form of an address must begin with a digit. Since some addresses contain letters, you must often abbreviate leaving a leading zero.

Thus, 4.020701000A32 is abbreviated 4.0A32

TARGET NAME

The use of addresses may be confusing to you so in most cases your network manager will assign a name of up to 8 characters to the target port. These names will be chosen to be easy to remember and meaningful.

For example If you have a Digital Equipment Corporation VAX computer your manager may choose a name as simple as VAX and you will use this name in the simple commands described in the following sections.

- Fill in the names (and addresses if used) of the ports you will be using on your summary sheet.

(You will be asking for information about attention sequence and passwords so it might be wise to delay your call to the network manager until you have read Sections 2 and 3.)

2 HOW TO ENTER (AND LEAVE) COMMAND MODE

The command mode is used when you need to communicate with an NTS10 (as distinct from a computer). You will need to do this to set up and break connections and perform more advanced NTS operations.

When you power up your terminal you may receive the prompt

```
NTS1:
```

In this case you are in command mode and may enter commands immediately.

If this is not the case you must enter a string of one or more characters known as the attention sequence. You must ask your network manager what attention sequence is defined for your terminal. _Fill it in on your summary sheet._

If you entered the command state to perform a function other than to establish a connection (e.g. to send a message to another user or to use the SWITCH facility described in Section 8) you will probably want to get right back to what you were doing. Ensure at this point that you have the following prompt:

```
NTS1:
```

Later you will learn about NTS2:, NTS3:, and NTS4:

Enter the command

```
RESUME <return>
```

and you will be back in communication with the call you just put on hold or receive an error message if the connection does not exist.

3 HOW TO ENTER AND USE A PASSWORD

In most installations the computer port you wish to access is protected by an NTS password. In order to gain access to this port you will need to know one of the valid passwords for it. The only way you can determine this is to ask your network manager.

Find out which password you must use for each of the target ports you will be using. Fill in the information on your summary sheet. Don't give it to unauthorized personnel.

You must enter a password at the NTS port to which your terminal is connected. This password is your key to access to the doors protecting the computer ports.

If you know the required password you must put your terminal (actually the NTS10 port) in command mode (see previous section). This will normally give you the prompt

```
NTS1:
```

Enter the command

```
PASSWORD <return>
```

You will be prompted with

```
Type your password:
```

Enter a valid password <return>

(The password will not appear on the screen.)

The NTS10 now "knows" your password, and will use it to attempt to gain access to the ports you try to call.

If you do not create a password the NTS will automatically try to use a default password previously entered by your network manager. Find out what it is and enter it on your summary sheet.

If the ports you wish to use can be accessed with this default password you need not worry about entering a password.

You may need to repeat the password procedure to change your password if you need to call more than one port (computer) during the day.

If you leave your terminal unattended you may wish to erase your password to prevent unauthorized use.

```
You ENTER:         <attention sequence>
You ENTER:         PASSWORD <return>
NTS10 RESPONDS:    Type your password:
You  ENTER:        <return>    (return key only, no characters)
NTS10 RESPONDS:    Your password has been erased
```

4 HOW TO SET UP A CONNECTION (CALL)

Now you have entered a password and know the name or address of the computer port you wish to use. To make the connection ensure you are in command mode, i.e. you have the prompt

```
NTS1:
```

Respond to the prompt with, for example

```
CALL VAX <return>
```

(But use the name you were given by your network manager)

or

```
CALL 4.32 <return>
```

(But use the address you were given by your network manager)

In more general terms your reply is

```
CALL <port-name/number> - a valid name or address -
```

You will be connected to the selected port.

If there is a problem you will receive an error message. Most of the messages are self explanatory (see Appendix A). A common problem is that your password is incorrect. Correct it and retry. If you cannot overcome the problem ask your network manager for help (or a more established user).

5 HOW TO DISCONNECT

When you have finished using a connection you need to do two things.

First: perform the normal "logoff" sequence for the computer you are using. This frees the resources and will stop the accumulation of accounting data and free the port for another user.

Second: enter command state (see Section 2).

When you receive the prompt

```
NTS1:
```

Enter - DISCONNECT <return> (or an abbreviation DIS)

You have now closed the connection and may start over.

(or power off!)

You may wish to erase your password as described in Section 3.

6 HOW TO RECALL

If a connection (referred to as a virtual circuit) is broken for any reason during a CALL you will automatically be returned to command state and receive the prompt

```
NTS1:
```

(or NTS2:, NTS3:, NTS4: if you are using the multiple

connection facilities described in later sections)

The connection may break for several reasons including failure of the target computer or the target NTS. You may try to re-establish the connection by issuing

```
CALL <return> - do not enter a name or addres
```

This method of recall has the advantage that you will automatically reconnect to the identical port which you were using. Even if there are several with the same name. After a connection has been broken and before you call it again, the target port is available to other users, so it is important not to delay re-establishing the connection if you were logged on to a computer when the connection was broken.

Now you have been introduced to the basic concepts needed to use the NTS as a simple switch - many users need go to no further.

While using the NTS10 in our own network at Interlan we have found most users find it useful to use a few more commands.

Read them briefly, use them once or twice, try to remember they exist and as you gain experience come back and try them again.

7 HOW TO CAMPON

When you try to make a connection (CALL) you may receive a message which says

```
PORT BUSY, TRY AGAIN LATER
```

If you wish to continue trying you may use the CAMPON command to wait until the port is free.

Enter

```
CAMPON <port name> or <port address>
```

OR

```
CAMPON 4.32
```

eg. `CAMPON VAX`

When the port becomes available you will automatically be connected, your terminal will "beep" if it has this feature and you will receive a message similar to the following:

```
Connected to 4.000032
```

8 HOW TO SET UP SEVERAL CONNECTIONS AND SWITCH BETWEEN THEM

Up to now we have treated the NTS as a rather simple switch and used the analogy with a telephone to show how to set up a call.

The NTS will in fact turn your terminal into a multi line (multiple virtual circuit) instrument and provide you with up to four alternate open connections.

Using this facility is like trying to have four telephone conversations. You quickly conclude you cannot do it. Instead you alternate between the connections and put the other lines (virtual circuits) on hold, instead of disconnecting.

The mechanism you use is the SWITCH command. All you need to do is

- Enter command state and receive the prompt

```
NTS1:
```

- Enter the command

```
SWITCH <RETURN> or SW <return>
```

you will receive the prompt

```
NTS2:
```

You may now use your 'second line' to CALL etc.

If you enter

```
SW <return>
```

you will receive the prompt

```
NTS3:
```

and repetitive use will cycle around the available virtual circuits. (NTS4 -- NTS1 -- NTS2 -- NTS3 etc)

Your port may be configured to allow fewer than four connections. By issuing the switch command several times you can quickly determine your ports limit.

You may also use

```
     SW <virtual circuit number> <return>
```

e.g. SW 3 <return>

to move directly to a specific virtual circuit.

Remember the use of RESUME to get out of command mode

9 HOW TO DISCONNECT SEVERAL CONNECTIONS

If you are using the multiple virtual circuit facilities described in Section 7 and wish to disconnect one or more of them, there are two alternative methods.

The first and safest way is to treat each connection independently and follow the normal DISCONNECT process described in Section 5.

To recap

- "logoff" the system
- enter command mode
- DISCONNECT <return>

Then

- SWITCH and repeat above for next connection

Continue until all virtual circuits are closed down.

The second way is faster as it automatically disconnects all your virtual circuits and resets your port parameters. However it does not "logoff" from the target computer. With some systems this does not matter as the system will be able to detect the disconnect and will "logoff" automatically. You should check with your network manager to see if the systems you are using can do this. If they can you close down all circuits by

- Entering command state

- Entering FINISH <return>

In addition to closing down all virtual circuits, the finish command destroys your password and resets the port for the next user. Just be sure you have logged off and disconnected properly before using the finish command.

10 HOW TO SEND A MESSAGE TO ANOTHER USER

You can send short messages to another port on the network, or to several ports on the network at the same time, by using the BROADCAST command.

To send a message to Port 3 on NTS10 number 34, type:

```
NTS1: BROADCAST 3.34 "Testing, 1, 2, 3."
```

To send a message to all Port 3s on your NTS network, type:

```
NTS1: BROADCAST 3.0FFFFFFFFFFFF "Testing, 1, 2, 3."
```

FFFFFFFFFFFF (twelve Fs) is the address for "all NTS10s".

To send a message to all ports on the network, type:

```
NTS1: BROADCAST * "Testing, 1, 2, 3."
```

Your message will only reach the ports which allow access to your password and which are set up to receive messages.

To send a message to all ports named VICEPRES on the network, type:

```
NTS1:  BROADCAST VICEPRES "Executive Meeting at 3 Delayed 30
       Min."
```

Your message will only reach ports which allow access to your password, are set up to receive messages, and are named VICEPRES.

11 HOW TO GET HELP AND LEARN MORE

By now you have realized that the NTS10 is a flexible and powerful switching facility. This guide has tried to make it easy to use for the majority of users. As your needs grow you may need to examine the parameters which control the operation of the port to which your terminal is connected.

The HELP command gives you the names of the parameters, which of them can be altered, some idea of their meaning and permissable values.

Experiment with it.

The SHOW command - issued for your port with a list of parameters will display the values. Try It!

```
SHOW PORT=VICEPRES   PORTNUM, ADDRESS, NAME1, NAME2, STATE
```

For further information refer to the NTS10 Network Manager's Manual. The person acting as network manager should also be able to help.

APPENDIX A

ERROR AND STATUS MESSAGES

This appendix lists the error and status messages from the NTS10 along with each message's number.

A.1 MESSAGES DURING CALL ATTEMPTS

Error at other end:

Message Number	Message
17	Session already connected
18	No such session number
19	This session has no connection
20	Call aborted

Problems while dealing with a remote NTS10:

Message Number	Message
21	Unknown object type ;i.e., neither PORT= ;or NODE=
22	Unknown parameter name
23	Illegal parameter value
24	No privileges for operation
25	Read only parameter ;i.e., you can't ;change it
26	No route to network
27	No port with this name
28	Port busy, try again later
29	Other end hung up
30	Invalid port number
31	Port interface error at other end ;i.e., something ;went wrong across ;the remote port's ;RS-232C interface
32	No response from other end
33	Illegal node number
34	Sorry. Protocol problems. Try again

A.2 MESSAGES FROM NTS COMMANDS

Bad command line:

Message Number	Message
0	NTS doesn't understand this command
1	This word needs more letters
2	This is not a number
3	NTS ignored everything after here

Bad command line syntax:

Message Number	Message
4	NTS requires a node number
5	NTS requires a session number
6	NTS requires a message
7	NTS requires an object type ;i.e., PORT= or ;NODE=
8	NTS requires an object name or number ;i.e., an argument ;to the PORT= or ;NODE=
9	NTS requires a port name or number
10	NTS requires a network number
11	NTS requires a parameter name
12	NTS requires a parameter value
13	NTS requires a dot (.)
14	NTS requires an equals (=)
15	Symbolic name not allowed
16	Bad range

End of Appendix

TERMINAL USERS SUMMARY SHEET

Fill it in as you read the guide

NAME:

COMMAND	USE	USER GUIDE SECTION
BROADCAST	send a message	10
CALL	set up or re-establish a connection	4
CAMPON	wait for a connection	7
DISCONECT	break a connection	5
FINISH	restarts port (TAKE CARE!)	9
HELP	get Help	11
PASSWORD	submit a password	3
RESUME	return to a suspended connection	2
SHOW	display parameter values	11
SWITCH	change to another connection	8

PORTS I CALL TO

PORT NAMES/ADDRESSES	PASSWORD	DESCRIPTION

PORTS I CALL FROM

INFO OTHERS NEED TO BROADCAST TO ME		INFO I NEED TO USE PORT		
PORT NAMES/ADDRESSES	PASSWORD	DEFAULT PASSWORD	ATTENTION SEQUENCE	DESCRIPTION

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